

# BREAKTHROUGH ENERGY INNOVATION: SEIZING THE OPPORTUNITY

**By viewing energy efficiency not as a requirement — but as a strategic opportunity — engineers have a chance to shine.**



By **Rob Harwood**,  
Director,  
Industry Marketing,  
ANSYS

Historically, many companies focused on waste reduction, “green” product development, recycling and other environmental initiatives because they were required to. Sustainability became a corporate priority based on external drivers such as ever-tightening regulations, shareholders’ demand for lower operational costs, and customer concerns about the environmental footprint of the products they were buying.

But today sustainability has taken on a much larger, more strategic role in most businesses. According to McKinsey’s Global CEO Survey, executives today value sustainability because they view it as closely aligned with their company’s core goals, mission or values.

They recognize that sustainability can actually drive revenue growth.

Energy is at the heart of corporate sustainability initiatives and, by its very nature, impacts all industry sectors. Much attention continues to be focused on how energy-efficiently products are manufactured — as well as how energy-efficiently they perform in the field. Traditional questions such as “How can we make

energy-related innovation?” As competition increases and consumers become more demanding, it’s increasingly clear that “more of the same” is not enough to drive increased revenues. Incremental product improvements will fall short in meeting both external market needs and internal business goals. Only breakthrough energy innovation will deliver the technological disruption required to change the

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our products consume less energy to save customers money, and how can we reduce the number of components and the amount of materials to improve margins?” continue to be important.

Today, however, the world’s leading engineering teams are being challenged to take their energy focus a step further by asking “How can we completely reinvent our products to differentiate ourselves — and dramatically increase sales — via

game and seize market leadership.

Product development teams are responding to this challenge in two ways. First, they are adding significant complexity to their existing, already highly tuned products. Second, they are designing disruptive new products that replace long-standing incumbents by operating outside historical design paradigms and constraints. In both cases, engineering teams face the same problem. The design variables, interdependencies and unexplored

trade space have suddenly become substantially larger, with little experience as a guide. “We just haven’t done this before” is becoming a new engineering norm.

In this environment of exploration and discovery, engineering simulation is an essential tool. By working in a risk-free virtual design environment, product developers can quickly explore design trade-offs and arrive at optimal decisions that balance energy improvements with reduced costs and increased performance.

For example, when designing products that require energy to move, engineers can predict the impact of weight reduction on their products’ structural strength and durability over time. They can arrive at revolutionary designs that deliver breakthrough energy innovation — without investing energy, materials, time and money in prototypes and physical testing.

This issue of *ANSYS Advantage* highlights many of the ways our customers are delivering breakthrough energy innovation by leveraging the power of engineering simulation in five core application areas: advanced electrification, machine and fuel efficiency, aerodynamic design, effective lightweighting and thermal optimization.

We hope the articles in this issue shine a light on the pivotal role engineers and engineering simulation are playing in producing breakthrough energy innovation. We also hope these stories will energize and inspire your own innovative efforts to seize the energy opportunity, whatever industry you are in. **A**



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